DOCUMENT RESUME

ED 062 230 SO 002 747

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TITLE	High School Students as Social Scientists.
PUB DATE	[69]
NOTE	20p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Disadvantaged Youth; *Experimental Curriculum; *Experimental Psychology; High School Curriculum; Minority Group Children; Scientific Methodology; Secondary Grades; *Social Sciences; Student Projects; *Student Research; Underachievers

ABSTRACT

This paper describes an informal, two-year collaboration of high school students, a teacher, and a psychologist; offered as an optional part of an elective, experimental psychology course. The goal was to help students begin to adopt the perspectives, tools, and research skills of the social scientist. The school has a student body of 2400; more than half the students are members of minority groups. Early class meetings were used to introduce the psychologist as a resource person, and to focus on possible project topics. Suggestions for topics centered around drugs, racism, police, and suicide. Over a two-year period, two project groups in two different classes were able to organize, design, and conduct their own investigations. Both studies were of a survey nature. The more complete project, which dealt with racism, is described in detail. As a sophisticated, controlled study, this student project left much to be desired. However, students who had never before shown the interest or ability were able to complete an investigation of their own design, and demonstrated some understanding of important elements of the scientific method in the process. (A few guidelines are offered for those interested in developing similar programs.) (Author/JLB)

ED 062230

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HIGH SCHOOL STUDENTS AS SOCIAL SCIENTISTS [1]

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Piaget and his associates (1969; 1952) have long emphasized the crucial role of learning-by-doing in the cognitive development of the child. Unfortunately, the implications of their research for designing relevant, stimulating learning environments where the child can freely explore and experiment for himself has so far had little impact on the vast majority of our public schools. Many educators have tried to conduct new or innovative approaches, but few have had any success at effecting significant changes in their respective school

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[1] The authors wish to express their thanks to the students, faculty and administration of Balboa High School, San Francisco, California for their help and cooperation.

[2] The views stated here are those of the authors, and do not necessarily reflect the opinions or policies of the San Francisco Unified School District or the California Department of Mental Hygiene.

systems. Kohl (1967) dramatically demonstrated that so-called "underachieving", "underprivileged" or "deprived" pre-adolescent black children from a ghetto school do indeed have a lively and keen interest in their surroundings. He found them to be aware, creative, eager learners in an educational environment which offered them resources, intellectual excitement and freedom to respond to their own interests. And Holt (1964) has argued in a very persuasive way against the usual school cirricula that seem to maximize failure, stifle initiative, and in general create an anti-intellectual climate in which boredom, apathy, passivity, or mechanical compliance to lesson plans seem to be the main student responses.

It is the thesis of this report that Piaget's contention regarding learning-by-doing holds true for learners of all ages. With Bruner (1960), we also hypothesize that the fundamentals of any science or field of knowledge can be meaningfully introduced and digested at any age if students are provided opportunities to utilize the resources of their environment in a systematic fashion. Our paper is addressed to an application of this approach in a high school setting.

The Experimental Method as a Learning Process

We will describe an informal, two-year collaboration of high school student, teacher and psychologist offered as an optional part of an experimental psychology course. Our goal in this venture has been to help students begin to adopt and try out the perspectives, tools, and research skills of the social scientist. We see such student-inspired and student-conducted projects as having a two-fold purpose:

a) Providing learning opportunities in which students propose topics or problems they wish to research, then plan and conduct such projects outside the classroom. Here, our concern is with an educational process that encourages students to take a responsible, active role. The experimental approach appeared to be a particularly suitable way to achieve these ends, since it involves the formulation of questions or hypotheses, devising a strategy to amass evidence in an organized, impartial way, some kind of quantification of the data, and finally critical evaluation of findings.

b) Generate substantive, first-hand information or data from which students may draw their inferences, opinions or conclusions.

The School

The school has a student body of around 2400. Parents of the majority of students work in blue collar jobs, semi-professional occupations, retailing and manufacturing. Fewer than 10% of the families are on public assistance.

More than half of the students are members of minority groups, with half of those Negro. The school has a generally non-academic reputation, with home economics and industrial arts heavily emphasized in its curriculum. Intelligence testing data shows no more than 6% of the students with IQ's of 115 or higher.

There is a disturbing background of violence, racial conflict, and student apathy. Approximately 300 students per year drop out of school, and the daily list of absentees usually numbers more than 400. Within the past five years, three students have lost their lives

in racial outbursts, and a school-wide student riot resulted in the school's temporarily closing. Police were called to restore order. Police patrols still maintain close surveillance around the school.

The Classes

The classes were offered by the instructor (HPJ) as experimental courses in psychology, and were composed of average to above average students, grade-wise, mostly juniors and seniors, who had selected it as an elective. Class size ranged around 26-30. In racial composition, the classes were generally representative of the overall student body, with 38% black, 35% white, and 27% from other minority groups.

Student interest and participation in the two classes gradually developed in very similar fashion, from early classroom discussion to organizing research teams to final design and completion of project. This process seemed to involve two distinct phases.

Phase I: Orientation and preparation.

All students were informed by their instructor at the beginning of the experimental course that those desiring to take a more active role in their education would be offered an opportunity to formulate their own ideas for research projects to be conducted outside of class. Students electing to design and complete such projects would receive credit for the extra work and time involved. Some early class meetings were accordingly given to spirited, open, and often heated

discussions among students and instructor regarding possible project topics. The psychologist attended at least two of these initial class meetings in order to:

a) Introduce himself as a resource person to all students, briefly discussing his own background, interests, and approach to social-psychological problems.

b) Provoke and stimulate thoughtful (as well as spirited), goal-oriented discourse as to how various ideas on topics might be conceived and carried out within a research format.

c) Help students adopt a more intellectual, inquiring attitude toward issues that trouble them about school, community and family. Help them also see themselves as potential agents of social change whose research efforts might provide important data that could have significant political or social impact.

In the two classes following this format, the ideas and suggestions raised for possible projects covered a number of topics, centering especially around the following areas:

Drugs

Patterns of drug usage among high school students and teachers; attitudes of students, teachers, and parents toward drug usage; differences in drug usage among the various ethnic and racial groups in school; age and sex differences in drug usage among students; why kids use drugs.

Racism

Attitudes and feelings of students and teachers toward interracial social activities at school; effects of parental attitudes toward race on students; does class integration help without outside social involvement; attitudes and feelings of students, teachers, and parents toward interracial marriages; what is mutual respect?

Police

Effects of police presence on community and on students at school; attitudes of police toward black community and toward students.

Suicide

Why and how people kill themselves; suicide rates among various racial and ethnic groups.

Phase II: Project Groups

Once students had discussed and argued the various possibilities for projects, it was up to them to decide whether they wished to develop and conduct their own investigations. Those with similar interests or ideas were encouraged to collaborate together in project groups. From this point on, the psychologist functioned largely as a resource person and research consultant whom student groups individually contacted to work out problems in design, data collection, and data analysis.

Over a two-year period, two project groups in two different classes were able to organize, design, and conduct their own investigations. In both instances, students worked on their projects well past the end of the semester until all data were tabulated and analyzed.

Both student studies were of survey nature, utilizing questionnaire data on opinions and attitudes. The earlier investigation on attitudes toward and patterns of drug usage among high school students was organized and completed by a project group of four students. However, no written paper on this project was completed. A second study on racism within the school, conducted by a group of four students, three black and one white, directed by Al Cook was in many ways more complete and included a final summary of findings. This project will be described in some detail, including attention to data obtained, reactions of fellow students, teachers, and administrators to student investigators, and student investigators' own evaluation of their findings and experiences.

Assessment of Racist Attitudes: A Case Study

The racism study was conducted over a two-month period. This topic mobilized considerable tension and concern throughout the entire school community, much of it latent. Not surprisingly, student investigators began encountering marked resistance as data collection progressed. Many fellow students refused to fill out the questionnaire, feeling that it was a waste of time, and that the student researchers were a "bunch of racists" for doing it. Many others which were completed were invalid because of incomplete, sarcastic, or obviously absurd answers. One batch of 20 questionnaires included in the original sample turned out to be faked data, filled out by the same student. Many faculty similarly reacted with hostility, antipathy, and ridicule. Several teachers were opposed to the survey, and objected

to the racial character of the questionnaire, though no respondents were asked to sign their names. Some teachers threatened reprisals against students conducting the survey, such as recommendations for suspension, while others refused to allow members of the survey team into their classrooms. Table 1 shows the questionnaire designed and used by the sudent research team. The students did not specify how many teachers received questionnaires, but only one teacher questionnaire was returned.

Insert Table 1 about here

The following verbatim report with minor editing is the final paper which the student investigators themselves wrote, presenting their findings and conclusions. It includes errors in statistical tabulation and the faked data which had gone undetected:

A Survey on Racism

This survey is based on the attitudes of people in the high school community of different races and cultural backgrounds. Upon gathering our main ideas, we decided to explore three view-points of the subjects' minds: The points were: "Integration", "Racism", and "Interracial Marriage."

Method:

As a format, we had several methods for obtaining the needed information, but finally concluded we would use the question method. After formulating the questionnaire, we decided to circulate it to

each grade level at school. Approximately 210 copies were distributed among the students and teachers. Out of the 210 copies distributed, only approximately 189 were collected. At this point, we began to tabulate our findings.

The questionnaire had to be broken down into categories so data could be recorded accurately. Six of the ten questions were multiple choice items like "yes", "no", or "don't care", and they were easily counted. The other four questions asked opinions, so we had to summarize four to five main ideas of the answers and put them in the best suited category. Each category was given a code number which was recorded with the other data. In this stage, we began to get the greatest impact from the survey.

Results

We began to see the real attitudes of the different races toward each other. For the people that were under the illusion that everything was fine between all of these different cultures, it was a shocking blow to discover such facts as these:

1) There were more blacks against mixed marriages than were whites
2) 80% of the black students were more prejudiced than were whites
3) 85% of the whites living in an integrated community would prefer to live in a segregated one

Conclusion

It is my opinion that all of your white friends aren't really your friends at all if you are Black or Third World.

Educational Value of the Project Approach

We return now to our original two-fold aim in fostering student-conceived and student-conducted research. To what extent have students been able to devise and implement their own projects in a fashion that allows them to meaningfully utilize the orientation and research skills of the social scientist? And how valid has data thus obtained been?

As a sophisticated, controlled, and well-conceived study, this student project on racism, of course, left much to be desired. The students who did the project had no prior experience in research technology or knowledge of psychology. The project topic evoked much strong feeling among many members of the school community, including the student investigators themselves. This raises the question of institutional or community approval and/or cooperation regarding research aimed at assessing some aspect of its functioning. It has been reported that advance preparation and even participation in the research process itself of important individuals or agencies within the community to be studied is crucial both from an ethical standpoint and to insure successful data collection (Mercer, Dingman, and Tarjon, 1964). In the present situation, no special efforts were made by us either to prepare the school community for this kind of survey or to secure their consent as respondents. We had anticipated little difficulty, since the project was student conceived and student directed as part of their classroom program. Such an omission proved to be a mistake. Student researchers well known to fellow students and teachers, and working within their own organization, still

encountered much hostility and resistance. Their efforts at obtaining cooperation from respondents would have been far more successful had we sought to enlist the support of the rest of the school community by providing some advance preparation regarding research goals and some commitment on our part to report the results.

There were errors both in the data collection and tabulation stages. For example, more careful scrutiny of the data revealed that there was actually no support for findings #2 and 3 in the students' final report. Rather, the data revealed both black and white students equally attesting to prejudicial feelings, and only about 50% of white students currently in integrated communities wishing to live in non-integrated ones. Furthermore, failure to identify invalid questionnaires resulted in a total sample of only 107 rather than 189 as was originally reported.

Such mistakes in data collection and analysis naturally led the students into erroneous results. In the sense then of providing a valid body of information from which students could draw their conclusions, the study was a failure. Failure also to consult with the student research team at the conclusion of their project so that difficulties and errors in the investigation could be systematically examined proved to be an especially serious shortcoming. Wrap-up sessions could have provided opportunities for students to integrate what they learned and to discover how their biases or errors affected their results. As it was then, this experiential introduction to the scientific method must be regarded as incomplete, for student investigators may have completed the project falsely believing they had obtained conclusive proof for their assertions.

Still, the above drawbacks are not viewed as critical ones that would lead us into abandoning student-centered social research as a valuable educational approach. For all its inaccuracy and roughness, this project seemed to accomplish some very fundamental educational objectives. In their brief account, students demonstrated some awareness and understanding of such basic aspects of the experimental process as: a) formulating research questions, b) alternative modes or instruments for gathering information, c) sampling theory, d) coding or quantification of qualitative data, e) statistical breakdown or summary of findings. Furthermore, students also found themselves confronted with certain moral, ethical dilemmas which social scientists everywhere face. They had to struggle with justifying and establishing their roles as impartial researchers who must deal with both intense social pressures and their own mixed feelings or biases. As the project leader remarked in his final appraisal of the study -- "The whole project was a completely new experience to me -- I'm positive each phase of this survey had had a great effect on the personality of each member of the group."

But most impressive to us was the fact that students who have never before shown the interest or ability were able to complete an investigation of their own design, demonstrating some understanding of important elements of the scientific method in the process. They were able to accomplish this in a setting where the animosity, antipathy, and negativism of both fellow students and faculty made their attempts at rational inquiry all the more difficult.

Final Assessment:

In an important sense, students in this project learned a great deal about how one goes about using one's intellect and judgment when it comes to issues or social concerns around which strong feelings are held. Following the scientific method requires moving from a blind faith basis to beliefs or convictions about the world to a recognition that it is necessary to develop strategies to obtain evidence or proof that substantiate or repudiate such beliefs. Student investigators who participated in this project have at least begun to move in this direction. That their study led to some erroneous conclusions indicates not that the experimental approach is an inappropriate model for learning, but that we did not go far enough in providing opportunities for feedback for critical appraisal of their own work.

Despite the problems we encountered, it seems to us that student-conceived and student conducted research is valuable both as an educational model and as a way for psychologists or other behavioral scientists to teach their research skills to others in a socially meaningful context. Hence, we would strongly encourage similar applications of the experimental approach utilizing close collaboration of psychologist-student-teacher.

As we have said, successful use of the experimental method results in students taking an active, involved, responsible role in their own learning. We have found this in turn depends on a number of other conditions. We can perhaps best summarize them by offering the following guidelines for those interested in developing similar programs at the high school level.

1.) The instructor must himself demonstrate scholarly interest and enthusiasm for the experimental method as a viable way of answering questions and finding out about the world.

2.) He must then be prepared to establish the kind of flexibility and classroom atmosphere that encourages student curiosity and inclination toward independent explorations outside the classroom. For example, students are told that outside class work such as data collection or consultations with the psychologist will be considered as field trips for which they will receive extra credit.

3.) Approval and support for the course, both from other faculty and higher administrative levels is crucial to its success. This usually entails meetings with the principal or other interested staff to inform them of the course's aims and anticipate difficulties which might arise during implementation of student conducted investigations.

4.) If persons either in or out of the school are asked to participate in research, then such individuals should be fully informed and their rights safeguarded in a manner consistent with guidelines layed down in the A.P.A.'s Ethical Standards of Psychologists.

5.) The psychologist's expertise in the design and conduct of research makes him an ideal consultant with whom students might work. He can collaborate with them at all stages of their investigations, from helping them translate their concerns, hunches, or questions into research strategies to the final presentation and evaluation of their findings.

6.) Final "post-mortem" sessions with student researchers and consulting psychologist at the conclusion of their study. Such discussions, though not included in our own format, would have been most useful in

helping students critically examine their research efforts, searching out how problems encountered or errors made affected their results and conclusions.

We have been generally encouraged and pleased by the reception and response to this course. Over the years it has been offered, student interest in it has increased to the point where many must now be turned away. Surprisingly, what adverse reaction and criticism we have encountered seems to have come largely from other teachers who disapprove of students pursuing their own research interests, in areas of social concern or controversy, such as racism or drug usage. We are hopeful that efforts on our part toward educating other faculty regarding our goals and enlisting their cooperation will reduce this kind of negativism.

Finally, the senior authors (Edward Gould and Howard P. Jeter) have found this collaboration to be an especially rewarding, enjoyable, and enriching experience. For the psychologist desiring meaningful involvement in the community, it is a way of making a valuable contribution through his academic training and knowledge of the experimental method. For the teacher, it is a way of making important educative resources available to this students.

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Gould

Table 1

Questionnaire Designed and Used by Students in Racism Study

Survey on Racism

Race _____

Age _____

Sex _____

PSYCHOLOGY

Place of parents birth:

_____

In connection with an assignment in our Psychology Class a group of students are conducting a survey on racial attitudes of students and faculty at school. It will not be necessary to sign or indicate who you are; we are interested only in your honest opinion on this subject.

1. How would you feel if your sister/brother married out of her/his race?
2. How would your parents feel if their daughter/son married out of her/his race?
3. Do you approve of mixed marriages? Yes ___ No ___ Don't care ___
4. Are you satisfied with the position of your race in our society? Yes ___ No ___
5. In your opinion what is a racist?
6. Do you consider your neighborhood integrated? Yes ___ No ___

Table 1 (cont'd)

7. What neighborhood would you rather live in? Well integrated ___
   Very little ___ Not integrated ___
8. How do you feel on the desegregation program?
9. How do you feel on the school programs in San Francisco and the Bay Area?
10. Do you feel that the birth or death of famous Black leaders should also be made National Holidays? Yes ___ No ___
    Don't care ___.
11. Do you have any racial prejudices? Yes ___ No ___ Little ___

If you have any comments you wish to state, you may use this space.

Authors' Biographical Sketches

EDWARD GOULD (Ph.D., UCLA, 1965), is Staff Psychologist (Medical) at the Langley Porter Neuropsychiatric Institute and Assistant Clinical Professor of Medical Psychology in the University of California School of Medicine, San Francisco. His special interests include personality development, group process, and family therapy where he has published on the significance of communicative styles in families with disturbed adolescents. His current thinking on psychotherapy and the learning process draws heavily on a growth model approach to human problems, a la Maslow and Perls. This report reflects a new interest in exploring contributions psychologists can make towards improving the quality of our schools' educational efforts.

HOWARD P. JETER, M.A., has taught for 18 years in the San Francisco Unified School District. He has been active in both school and community affairs, serving on the Berkeley NAACP Board of Directors, the Berkeley Model Cities Board of Directors. He has established two experimental courses at school, a special psychology course described in this paper, and a tutorial reading project designed to remedy the reading deficits of black high school students. He also serves as faculty sponsor for an active Black Students' Union chapter at school.

Authors' Biographical Sketches (cont'd)

ALVIN COOK, a senior at Balboa High School, was born in Hattiesburg, Mississippi and moved to California in 1969. He is a star athlete and has lettered in football. Racist attitudes and racial oppression are topics of primary concern to him, and ones with which he has first hand knowledge. He plans on continuing his studies in college.